REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE (DD-MM-YY)	2. REPORT TYPE	3. DATES COVERED (From - To)
June 1999	Final Report	July 1998 to July 1999

4. TITLE AND SUBTITLE

An Evaluation of the Lower Rio Grande Valley Contracts with Non-VA Providers

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

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5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

South Texas Veterans Affairs Health Care System
San Antonio, Texas

8. PERFORMING ORGANIZATION REPORT NUMBER

20040226 170

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

US Army Medical Department Center and School
BLDG 2841 MCCS-HRA (Army-Baylor Program in Healthcare Administration)
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Fort Sam Houston, TX 78234-6135

11. SPONSOR... NUMBER(S)

38-99

12. DISTRIBUTION / AVAILABILITY STATEMENT

DISTRIBUTION A - Approved for public release; distribution is unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

Under increasing pressure to expand services and to improve access for veterans living in the Lower Rio Grande Valley (LRGV), the South Texas Veterans Health Care System contracted with non-VA hospitals. Under the contracts, veterans are referred to non-VA hospitals to receive outpatient surgery and medical procedures or short-stay hospitalizations (DRGs with a HCFA average length of stay of three days or less). Surprisingly, four months after the contracts were implemented actual utilization of the contracts was significantly lower than projected. The drastic discrepancy between the actual and the projected utilization raised many questions. In an effort to answer many of these questions, the utilization of the LRGV outpatient surgery and short-stay hospitalization contracts was analyzed. The objectives of the study were to: 1) determine how actual utilization compared to the projected utilization, 2) determine if patients who could receive care through the LRGV contracts are receiving care at the STVHCS rather than utilizing the contracts and if so, why, 3) determine how the contract costs compare with the VAMC costs of providing care, and 4) develop an improved method of predicting future utilization.

15. SUBJECT TERMS

South Texas Veterans Health Care System

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Education Technician
U	U	U	UU	35	19b. TELEPHONE NUMBER (include area code) (210) 221-6443

Graduate Management Project:

An Evaluation of the Lower Rio Grande Valley Contracts with Non-VA Providers

By

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U.S. Army-Baylor Graduate Program in

Health Care Administration

Acknowledgments

I would like to specially thank Louis DeNino, PhD, Health Economist, for his tireless effort and patience in assisting me with this project. Without Dr. DeNino's mentoring, this study would not have been possible.

Abstract

Background: Under increasing pressure to expand services and to improve access for veterans living in the Lower Rio Grande Valley (LRGV), the South Texas Veterans Health Care System contracted with non-VA hospitals. Under the contracts, veterans are referred to non-VA hospitals to receive outpatient surgery and medical procedures or short-stay hospitalizations (DRGs with a HCFA average length of stay of three days or less). Surprisingly, four months after the contracts were implemented actual utilization of the contracts was significantly lower than projected. The drastic discrepancy between the actual and the projected utilization raised many questions.

In an effort to answer many of these questions, the utilization of the LRGV outpatient surgery and short-stay hospitalization contracts was analyzed. The objectives of the study were to: 1) determine how actual utilization compared to the projected utilization, 2) determine if patients who could receive care through the LRGV contracts are receiving care at the STVHCS rather than utilizing the contracts and if so, why, 3) determine how the contract costs compare with the VAMC costs of providing care, and 4) develop an improved method of predicting future utilization.

Research Design and Method: Utilization data, collected between April 15, 1998 and March 31, 1999 was compared to the projected figures. Patients eligible for the LRGV contracts receiving care from the STVHCS between April 15, 1998, and December 31, 1998, were identified by a decentralized hospital computer program (DHCP) report. These patients were then surveyed by phone to determine why the patients sought care from the STVHCS rather than utilize the available contracts. Primary care physicians authorized to refer patients to contract providers completed written surveys to establish

their referral patterns for the contracts. A cost benefit analysis was performed to compare the estimated VAMC costs of providing care to the actual costs paid under the contracts for patients treated between April 15, 1998, and December 31, 1998. Finally, an improved model of predicting future utilization was developed using the moving average technique.

Results: Utilization of the ambulatory procedure contract exceeded the original estimate by 251 surgeries/procedures or 54 percent. However, utilization of the inpatient hospitalization contract was drastically below the estimated workload (estimate = 300 admissions; actual = 7 inpatients and 9 observation stays). Furthermore, only 18 inpatients potentially eligible to use the contracts sought care at the STVHCS. Of the veterans surveyed, 79 percent receive their medical care from the McAllen VA outpatient clinic. The majority of respondents (95 percent and 100 percent) were not offered the opportunity to receive their care in their local area at VA expense under the contracts even though the majority (93 percent and 74 percent) said they would prefer to do so if given the choice. Fifty percent of the physicians surveyed responded that they always refer patients to the contract providers for ambulatory surgery. The other 50 percent of physicians responded that they refer patients to the contract providers "most of the time". Physicians responded that their patients choose to utilize the contract most of the time (63 percent) or always (38 percent). The reason physicians don't offer the patient the opportunity to utilize the contract is because the patient did not meet the medical criteria (50 percent) or the patient had co-morbid conditions (50 percent). The reason patients refused to utilize the contracts was because the patient preferred treatment at a VA facility (23 percent), preferred treatment in San Antonio or Kerrville (31 percent), or was

familiar with the VA (23 percent). The results of the inpatient survey differed significantly from the ambulatory procedure survey results. Thirty-three percent of the physicians never refer patients to the contract providers for inpatient hospitalizations and another 33 percent of physicians seldom refer patients to contract providers. The reason sited by physicians is that few patients meet the medical criteria as appropriate candidates for the inpatient contracts. The cost/benefit analysis revealed that the contract cost is more than twice as expensive as the VAMC's marginal cost of providing care.

Conclusion: The STVHCS must make some strategic decisions regarding whether they want to improve healthcare access for veterans living in the LRGV. They must also evaluate whether under the current budget constraints they can afford to offer improved access at a cost that is more than twice as expensive as the VA's cost of providing the same care.

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Introduction

Historically, the South Texas Veterans Health Care System (STVHCS) provided a wide range of outpatient services in the Lower Rio Grande Valley (LRGV) at the McAllen VA Outpatient Clinic (MCOPC) and the Brownsville Contract Access Point Clinic (Roehl, 1997). The STVHCS reimbursed non-VA hospitals in the LRGV for emergent, fee-basis inpatient care provided to high priority veterans. All other inpatient care and ambulatory surgery was provided at the Audie L. Murphy Division (ALMD) in San Antonio, Texas and the Kerrville Division (KD) in Kerrville, Texas. Veterans using the ALMD or KD for inpatient care, ambulatory surgery, or specialty outpatient care had to travel 500 and 600 miles respectively (Roehl, 1997). Although adequate transportation services and overnight lodging at VA facilities were available, veterans living in the LRGV had poor access to health care due to the travel distance and inconvenience of seeking care.

Congressman Ruben Hinojosa, along with Congressmen Ortiz, Reyes, and Rodriguez, recognized the difficulties their veterans faced in getting needed ambulatory and inpatient services, due both to travel distance and to the lack of specialized VA services at the MCOPC and the Community Based Outpatient Clinic (CBOC) in Brownsville (Gober, 1997). Consequently in 1997, the Texas Congressmen undertook an initiative to expand VA services and to improve access for the approximately 40,000 veterans living in the LRGV.

In response, the STVHCS conducted a study of the estimated 42,240 veterans residing in the eight county area comprising the LRGV (Roehl, 1997). The study found

that the STVHCS provided a total of 1,204 inpatient episodes of care for LRGV veterans during FY96. Additionally, the STVHCS provided 57 outpatient procedures and 363 inpatient surgical procedures. It was estimated that approximately 45% of the inpatient surgical procedures could have been provided on an outpatient basis if the care was rendered in the LRGV. The study recommended three options:

1. Contract for ambulatory procedures at a recurring annual cost of $300,000 plus $15,000 in salaries.
2. Contract for routine, non-urgent, non-specialty inpatient care for DRGs with Health Care Finance Administration (HCFA) average length of stays of one to three days at an annual recurring cost $1,400,000 plus $77,500 in salaries.
3. Contract for all emergent and non-emergent inpatient care at an annual recurring cost $9,200,000 plus $92,500 in salaries.

All three contracts were fee for service contracts rather than fixed price-requirements contracts. Consequently, the monetary figures were projected volume-based estimates. Budget constraints prohibited the implementation of the third option. However, the first two options were accepted and contracts with Columbia Rio Grande Regional Hospital, McAllen, Texas, and with Columbia Valley Regional Medical Center, Brownsville, Texas, were implemented on April 15, 1998 (Struski, 1998).

Under the contracts, veterans are referred to non-VA hospitals in McAllen and Brownsville for outpatient surgery and medical procedures or short-stay hospitalizations (DRGs with a HCFA average length of stay of three days or less). Veterans are referred to the non-VA providers based on clinical appropriateness. Utilization of the contracted non-VA providers is optional. Veterans are offered the opportunity to participate in the

contracts, but do not have to accept. Veterans who do not wish to participate in the contracts can still obtain health care from VA facilities.

Based on the 1996 and 1997 workload for ambulatory procedures and inpatient hospitalizations of less than three days, Dr. DeNino (1997), Health Economist, projected the workload for the contracts to be approximately 300 ambulatory procedures and 300 inpatient hospitalizations during fiscal year 1998. However, as of August 1, 1998, actual utilization of the contracts consisted of only 78 ambulatory procedures and four inpatient hospitalizations (Moreno, 1998). The drastic discrepancy between the actual and the projected utilization raised many questions. Why weren't the contracts being utilized? Were veterans receiving care at the STVHCS instead of using the contracted providers? Was workload down?

Management officials at the STVHCS were questioning whether the contracts were cost-effective. In addition, STVHCS management wanted an analysis of the contract in order to make informed decisions when renegotiating the contracts in April of 1999.

Statement of the Problem or Questions

The research problem is that the actual utilization of the contracts is significantly less than the projected utilization. This lack of utilization is inconsistent with the veteran's and the Congressmen's stated need for better access to health care services in the Lower Rio Grande Valley. The research question is "Why is the actual utilization of the contracts less than the projected utilization?"

Possible sources of the discrepancy include:

- Patients meeting the criteria to receive contracted care are seeking care from the STVHCS instead of using the contract providers.
- Physicians are not referring patients to the contract providers.
- Patients are not meeting the criteria for clinical appropriateness necessary to utilize the contracts.
- Treating patients in their local area obviates the need to hospitalize patients in order to receive outpatient services.
- The healthcare wide trend to decrease inpatient hospitalizations and increase utilization of outpatient services.
- The analysis used for the original projections contained major flaws.
- The April through August time period may reflect a seasonal variation.

Literature Review

The rationale that it is more convenient for patients to receive treatment in their home communities is not a new concept in the VA. In the late 1950s, a VA physician who was a former hospital administrator implemented a program to provide mental health services to rural communities (Workman, Short, Turner, & Douglas, 1997). The goal of the program was to provide outpatient psychiatric services to veterans residing in outlying areas who would not otherwise have access to specialty psychiatric care (Workman et al.).

The STVHCS is not the first VA facility to contract medical care with non-VA providers. The Northern California Health Care System (NCHCS) pioneered the concept of contracting with non-VA providers for inpatient medical services. In August 1991, the

Department of Veterans Affairs announced the closure of its Martinez, California Medical Center (VAMC) due to seismic and structural deficiencies in the main hospital building (Price Waterhouse, The Lewin Group, & Applied Management Engineering, 1997). The Veterans Health Administration (VHA) proposed construction of a new, 243-bed VAMC at Travis Air Force Base in Fairfield, California, to provide inpatient services to veterans in its NCHCS service area in the absence of the Martinez facility (Price Waterhouse et al.). However in 1995, Congress expressed skepticism about the need for constructing a new VA facility and questioned whether the VHA's plan was the most cost-effective alternative for meeting the health care needs of the veterans in the NCHCS. Congress directed VA to reassess its earlier plan to construct a new VA hospital. The General Accounting Office (GAO) investigated the matter and concluded "that the Travis construction project is not justified and that lower-cost alternatives should be more fully explored"(Office of Public Affairs News Service, 1997). Price Waterhouse, in conjunction with the Lewin Group and Applied Management Engineering conducted a study of the proposed Travis construction project and explored possible alternatives. Price Waterhouse et al. concluded that the construction of a new inpatient facility could not be justified based on the current and projected medical care needs of the veterans in the NCHCS. Rather, they recommended that the VHA assume direct operation of the McClellan Hospital at Mather Air Force Base in Sacramento, California. In addition, Price Waterhouse recommended negotiating a sharing agreement with Merrithew Memorial Hospital to provide inpatient hospital services to veterans residing in the East Bay and a sharing agreement with one of the community hospitals in Redding, California, to provide inpatient hospital services for veterans residing in the northern section of the

NCHCS primary service area. The recommendation maximizes access for veterans in the NCHCS; improves convenience for veterans and VA physicians and staff; provides flexibility to meet changing demand; proves cost-effective for VA and taxpayers; takes advantage of the excess capacity in the community; and facilitates medical education and research (Office of Public Affairs News Service, 1997).

Dr. Kenneth Kizer, VA's Under Secretary for Health (1998) recognized that VA health care needed radical reform in order to meet the challenge of providing accessible, high quality, cost-effective health care. Dr. Kizer plans to meet this challenge by shifting from inpatient to outpatient care, improving access to care, and reforming eligibility (Veterans Health Administration, 1997). "In making the transition from a hospital based inpatient system to an ambulatory care system, hospital utilization must be minimized whenever therapeutically possible, and inpatient services must be converted to outpatient services and extended into the community" (Veterans Health Administration, 1997). In recent years, the VA has made great progress in its effort to shift from inpatient to outpatient care. Between fiscal year (FY)1994 and 1997, annual VA inpatient admissions decreased 24 percent, while ambulatory care visits increased by 6.6 million (Kizer, 1998). Ambulatory surgeries increased from 35 percent of all surgeries performed in 1995 to about 75 percent in 1998 (Kizer, 1998).

Dr. Kizer is also committed to improving access to care. One of Dr. Kizer's goals is to "improve the access of current users of the VA healthcare system who find it difficult due to geographic location or medical condition to travel to a VA medical facility" (Veterans Health Administration, 1997). Veterans generally have less access to VA medical facilities than to private facilities (Government Accounting Office, 1996).

Although VA medical facilities are located throughout the country, they are greatly outnumbered by private-sector facilities. In contrast to the VA's 173 hospitals, there are over 6,000 public and private hospitals nationwide (Government Accounting Office, 1996). Consequently, private-sector health care is usually more convenient to veterans than VA health care. The accessibility of private-sector services, along with the cost-avoidance of investing in new facilities, often makes contracting with non-VA providers to enhance the geographic accessibility to healthcare very attractive.

The expanded contracting authority under the VA's new reformed eligibility criteria allows the VA to take advantage of this opportunity. VHA Directive 97-015 entitled "Enhanced Health Care Resources Sharing Authority" gives the VA the authority to contract for medical services. The expansion of sharing authority now enables VA to contract for medical services with community hospitals. Public Law 104-262, "The Veterans Health Care Eligibility Reform Act of 1996," significantly expanded the VA's health care resources sharing authority in Title 38 United States Code (U.S.C.) Section 8153 (VHA Directive 97-015). Section 301 of Public L. 104-262 contains provisions that eliminate existing barriers and disincentives to the sharing of health care resources with non-VA entities (VHA Directive 97-015). The primary purposes of the health care resources sharing authority are to strengthen VHA medical programs and to improve the quality of health care provided to eligible veterans.

Similarly, the Department of Defense (DoD) is attempting to make health care more accessible to its beneficiaries through an integrated network of military and civilian providers (Foundation Health Federal Services, Inc., 1996). In the past, DoD referred its patients to the nearest military treatment facility (MTF) for specialty care. Today, a

primary care manager may refer patients to an authorized Tricare civilian provider for specialty care (Foundation Health Federal Services, Inc., 1996).

Providing access to health care, especially in rural areas, is also a challenge for health care systems in the private sector. Just as the Congressmen were concerned about rural healthcare for their veterans, in the private sector, public policy makers, health care providers, educators, researchers, and health policy scholars have all discovered that rural health systems present unique challenges (Beaulieu & Berry, 1995). In the Midwest, for example, most patients have insurance coverage, but lack access to care (Nordhaus-Bike, 1998). The rural elderly face even greater barriers to healthcare. Rural healthcare is characterized by a lack of availability, accessibility, and affordability (Alexy & Elnitsky, 1996). According to Alexy and Elnitsky (1996), "These disadvantages are further compounded by lack of public transportation systems and an inadequate supply of healthcare providers who may not be familiar with rural community values and culture." Elderly patients also tend to be poorer, less educated and more reluctant to use community services than their urban counterparts (Alexy & Elnitsky, 1996). Thus, research suggests that rural elderly have poorer health and higher rates of chronic illness, disability, and mortality than their urban counterparts (Alexy & Elnitsky, 1996).

In order to meet the needs of many rural patients who otherwise wouldn't have access to healthcare due to distance and transportation problems, many healthcare delivery systems are developing rural integrated healthcare systems (Scott, 1997). Some healthcare providers integrate by opening satellite clinics, providing primary care services, or providing specialty healthcare services in rural areas. In fact, the concept has become so popular that the American College of Healthcare Executives (ACHE) held two

sessions on "Developing Integrated Healthcare Delivery Systems" in March, 1997 (Scott, 1997).

On the other hand, some healthcare system officials feel that owning or operating all the pieces of an integrated healthcare system is inflexible and costly (Pallarito, 1996). Consequently, virtual healthcare delivery systems have become popular. Virtual healthcare organizations offer a seamless delivery system through contractual relationships. An advantage of virtual integration is that a healthcare delivery system can be created without investing huge amounts of capital.

Another trend in the private sector healthcare industry is to expand the provider network. Customers are demanding the freedom to choose their healthcare provider. In response, many healthcare insurers and HMOs are expanding their network of providers in an effort to gain market share. Similar to the VA allowing veterans to seek care from non-VA physicians, Kaiser Health Plans, the granddaddy among group-practice-model HMOs, is loosening its network and allowing enrollees to see non-Kaiser physicians (Pallarito, 1996).

Deciding to contract with non-VA providers for medical care was only one element of the Lower Rio Grande Valley initiative. Another important element of the project was to identify the potential utilization of the contracts. The STVHCS used past utilization data to predict the future utilization of the contracts. According to the literature, this method of predicting utilization left out many factors and may not be the most accurate method. A number of models have been developed to explain the phenomenon of health care service utilization. One model, the behavioral model of medical care, by Andersen and Newman, is widely accepted in the research community

(Pan, Yang, & Chen, 1998). This model assumes that utilization of health care services is a function of three categories of variables: 1) personal attributes, such as gender, age, race/ethnicity, and marital status; 2) enabling factors, including income and insurance coverage; and 3) need-for-care factors as evidenced by objective health status and functional level (Pan et al.). Similarly, Coleman, Wagner, Grothaus, Hecht, Savarino, and Buchner (1998) believed that age and gender were predictive of health care utilization. However, Coleman et al. also included prior utilization and the presence of diabetes or heart disease as variables predictive of utilization.

Purpose

The purpose of the research project is to analyze the utilization of the LRGV outpatient surgery and short-stay hospitalization contracts.

The objectives of the study are:

1. To determine how actual utilization of the contracts compares to the projected utilization.
2. To determine if patients who could receive care through the LRGV contracts are electing to receive their care at the STVHCS or are being referred to the STVHCS by their physicians.
3. To determine how the costs of the contracts compare with the VAMC costs of providing care including salary, transportation, and boarding costs.
4. To examine weaknesses in the method used to predict the 1998 utilization and to develop an improved model using moving average techniques adjusted for seasonal variation.

Research Design and Method

This section describes the analyses that will be conducted to address each research question.

1. How does actual utilization of the contracts compare to the projected utilization?

The actual utilization of the contracts from April 15, 1998 through March 31, 1999 was obtained from the Case Manager for the LRGV project. The Case Manager maintains an excel database on all patients referred for care under the contracts. These figures were compared to the projected figures to determine how the actual utilization compared to the initial projections.

2. Are patients who meet the criteria for the contracts receiving medical care at the Audie or Kerrville Divisions of the STVHCS rather than using the contracts? And if so, why?

Patients eligible for the LRGV contracts receiving care from Audie or Kerrville Division of the STVHCS were identified by a decentralized hospital computer program (DHCP) report. The report identified all patients from the eligible eight LRGV counties (Brooks, Cameron, Hidalgo, Jim Hogg, Kenedy, Starr, Willacy, and Zapata) who received outpatient surgery or hospital care for DRGs with a HCFA average length of stay of three days or less from April 15, 1998 through December 31, 1998.

Using the DHCP generated database, a phone survey was conducted of all patients who received an outpatient procedure from the STVHCS rather than utilize the available contracts (see Appendix A). The purpose of the survey was to determine why the patients sought care from the STVHCS rather than utilizing the

contracts. Primary care physicians authorized to refer patients to a contract provider for ambulatory procedures were also given a survey to establish the referral patterns for the contracts (see Appendix B).

Similarly, using the DHCP generated inpatient admission database, it was determined if the patients were self-referred (unscheduled admissions) or physician referrals (scheduled admissions). A phone survey of all self-referred patients was conducted to determine why the patients sought care from the STVHCS rather than utilizing the available contracts (see Appendix C). Focused interviews with primary care physicians at the McAllen outpatient clinic were performed to determine why physicians referred patients to the STVHCS rather than to non-VA contract providers (see Appendix D). The validity of the survey questions was evaluated by conducting pilot tests of the survey instrument. The surveys were administered to a sample of veterans and physicians respectively to determine if the questions were interpreted in the manner the investigator intended. Minor revisions to the survey instrument were made on the basis of the pilot test results.

3. Are the contracts cost-effective? How do contract costs compare with San Antonio VA costs?

An estimate was made of what the costs of the contract care would have been if the care had been provided at the San Antonio/Kerrville VAMCs. Marginal costs were used as the basis for this analysis, since treating these patients could be accomplished without adding any additional personnel or infrastructure. It is difficult to accurately determine costs for specific services in the VA. To estimate the VAs cost of inpatient care I used data from the Decision Support System (DSS), the VAs

cost accounting system that provides costs on a patient-level basis. However, it is important to note that DSS is in its intermediate stage of implementation and validation. Unfortunately, the STVHCS does not have any available data for the cost of ambulatory procedures. I estimated the marginal costs of the ambulatory procedures by attributing costs to pharmacy, supplies, and physician costs for contract physicians who are paid per procedure.

The large volume and mix of ambulatory procedures prohibited obtaining actual cost data for each individual procedure. Therefore, it was necessary to estimate the costs. The cost estimate was obtained by sampling the four high volume procedures (cataract, colonoscopy, esophagogastroduodenoscopy, and cystoscopy) which accounted for 232 of the 292 procedures performed under the contract. The marginal VA costs were compared to the Medicare costs for South Texas. The ratio of VA costs to Medicare costs for these services was then used as a basis to estimate costs for all ambulatory services and procedures included in the contract.

Patients traveling the 500 or 600 miles to receive medical care are eligible for travel pay, i.e. reimbursement for travel expenses. Patients referred to the STVHCS for urgent/emergent inpatient hospitalizations are transported from the Valley by ambulance at an average cost of $615. In addition, many veterans are lodged overnight either before or after their ambulatory procedures. Consequently, transportation and lodging costs were added to the VAMC costs. Transportation expenses were obtained from the patient travel clerk in medical administration service. Lodging costs of veterans lodged at the STVHCS were derived from the

costs for food, laundry, and linen provided by nutrition and environmental management service.

Contract costs include not only the payments made to non-VA providers, but also the cost of administering the contracts. A quality management clinician authorizes eligibility for contract care, a social worker at McAllen engages in discharge planning, and a fee clerk at San Antonio prepares invoices. The salary costs of these employees were prorated according to the percent of time they spent performing these duties. These salary costs associated with administering the contract were added to the payments made to contract providers.

The estimated VAMC costs of providing care were compared to the actual costs paid under the contracts.

4. What is the best method to predict utilization of the contracts?

The original utilization predictions contained several flaws. Only two years of data were used in the forecast. Furthermore, the data were not analyzed for trends over time. In order to improve the accuracy of the utilization projections, an improved forecasting model needed to be developed. Cross-sectional multiple regression analysis is one method of predicting utilization. Unfortunately, the unavailability of data prohibited the use of this method. Another method of predicting utilization is the moving average technique. The advantage of using the moving average technique is that it accounts for seasonal variation. It also makes it possible to analyze data by quarter or season. This is valuable because utilization of healthcare services often varies by season, especially in South Texas where many "winter Texans" from the northern United States migrate south for the winter. Due to

the many advantages, as well as the availability of information, the data was analyzed using the moving average technique.

The moving average was calculated by adding each quarter's utilization value and then dividing by the number of quarters. For example, if the number of quarters used to calculate the moving average is four, then $(Q_1 + Q_2 + Q_3 + Q_4) / 4 = X_1$ (Seo, 1984).

The next moving average would be calculated as follows:

$(Q_2 + Q_3 + Q_4 + Q_1) / 4 = X_2$

In order to obtain moving averages centered on the midpoints of the quarters, centered moving averages were calculated by adding the two adjacent moving averages (X_1 and X_2) and dividing by two.

For example: $X_1 + X_2 / 2$ = centered moving average.

The seasonal index was computed by dividing the centered moving average for the quarter into the actual utilization for the quarter. Next, the seasonal index values were analyzed for trends. Using a four by three matrix, the seasonal index for the first quarter of each year were compared to see if the index was trending upward, downward or staying the same. This was repeated for each of the quarters. Finally, the utilization was forecast for the new contract (April 1, 1999 through March 31, by multiplying the most recent centered moving average for the quarter by its respective adjusted seasonal index.

The reliability of the method was tested by forecasting the utilization for the current contracts (April 1, 1998 through March 31, 1999). The forecast figures fell

within the 95% confidence interval of the actual utilization figures. Thus the methodology was determined to be statistically reliable.

Results

Utilization

From April 15, 1998 through March 31, 1999, 551 outpatient procedures were performed by contract providers (seeTable 1). Utilization of the ambulatory procedure contract exceeded the original estimate by 251 surgeries/procedures. During the same period, seven inpatient admissions and nine observation stays were provided through the inpatient LRGV contract (see Table 2). The actual utilization of the inpatient contract was significantly lower than the projected utilization of 300 inpatient admissions. This may be due in part to the fact that some patients who could potentially utilize the contracts are receiving care at the STVHCS rather than using the contracts. From April 15, 1998 through December 31, 1998, DHCP identified 134 outpatient and 18 inpatient veterans who were potentially eligible to utilize the contracts, but received care at the STVHCS.

Surveys

Seventy-seven percent (n = 104) of outpatient and 78 percent (n = 14) of inpatient veterans responded to the phone survey asking why the patients sought care from the STVHCS rather than utilize the available contracts. As summarized in Table 2, 79 percent of the ambulatory surgery respondents receive their primary care at the McAllen VA outpatient clinic. Survey results show that 95 percent of the veterans were not offered the opportunity to receive the ambulatory surgery/procedure in their local area at VA expense. However, 74 percent of the veterans responded that they would prefer to

have any outpatient procedures in their local area at VA expense rather than travel to the VA in San Antonio or Kerrville. Similarly, 79 percent of the inpatient respondents surveyed receive their medical care at the McAllen VA outpatient clinic (Table 3). None of the respondents were offered the opportunity to be hospitalized in their local area at VA expense, although 93 percent said they would prefer to do so if given the choice.

Eighty percent (n = 8) of the physicians responded to the ambulatory surgery survey (Table 4). The response rate of the VA physicians was 100 percent (n = 6). While the response rate of the community based outpatient clinic (CBOC) contract physicians was 50 percent (n = 2). Fifty percent of the physicians surveyed always refer patients to the contract providers for ambulatory surgery. The other 50 percent of physicians refer patients to the contract providers for ambulatory surgery "most of the time". Physicians responded that 63 percent of their patients choose to utilize the contract "most of the time". While 38 percent of the patients always choose contract providers. The reason physicians did not always offer the patient the opportunity to utilize the contract is because the patient did not always meet the medical criteria (50 percent) or the patient had co-morbid conditions (50 percent). The reason patients refused to utilize the contracts was because the patient preferred treatment at a VA facility (23 percent), preferred treatment in San Antonio or Kerrville (31 percent), or was familiar with the VA (23 percent).

Similarly, 60 percent (n = 6) of the physicians responded to the inpatient survey. One hundred percent of the VA physicians responded to the survey. While none of the CBOC contract physicians responded. Although this was not confirmed, it is possible that none of the contract physicians have had an occasion to refer patients to contract

providers for an inpatient hospitalization and thus did not respond to the survey. However as illustrated in table 5, the results of the survey differed significantly from the ambulatory procedure survey results. Thirty-three percent of the physicians never refer patients to the contract providers for short-stay inpatient hospitalizations and another 33 percent of physicians seldom refer patients to contract providers. In fact, one physician responded that he was unaware that such a contract existed, but he thought it was a good idea to implement one. The reason physicians don't refer patients to contract providers was consistent with the ambulatory procedure survey: because the patient did not meet the medical criteria (44 percent) or the patient had co-morbid conditions (44 percent).

Cost/Benefit Analysis

As illustrated in Table 6, the cost/benefit analysis shows that the contract cost is two and a half times as expensive as the VAMC's marginal cost of providing care. The contract cost, including salaries, was $45,043 for inpatient admissions and $294,655 for ambulatory surgery/procedures. While the VAMC cost, including travel and lodging costs, was $19,062 for inpatient admissions and $122,300 for ambulatory surgery/procedures.

Moving Average Technique

Using the moving average technique, the utilization for the current and future contract years were projected (see tables 7-10). The model predicted a utilization of 216 ambulatory procedures and 304 inpatient admissions for the current contract period April 1, 1998 through March 31, 1999 compared to the actual utilization of 551 ambulatory procedures and 16 inpatient admissions for the same period. Although the actual and the projected utilization vary significantly, the projections lie within the 95% confidence

interval of the actual utilization for the same period. Consequently, the moving average technique proved to be a statistically reliable predictor of utilization. However, the large standard deviations (237 outpatient and 204 inpatient) and confidence intervals (4.7 outpatient and 4.0 inpatient) create a large variation in the number of statistically reliable projections. In order to be a useful projection tool for the VAMC, the model needs to predict utilization with a greater degree of precision.

Discussion

The projected utilization of the LRGV contracts varied significantly from the actual utilization. The original projections underestimated the use of the ambulatory surgery/procedure contract by 251 procedures and overestimated the inpatient admissions by 284 admissions. The over-utilization of the ambulatory procedures does not concern the facility as much as the drastic under-utilization of the inpatient contract. One hypothesis for the under-utilization of the inpatient contract was that patients were receiving inpatient care at the STVHCS rather than utilizing the contract. Possible reasons for this included that the physicians weren't referring patients to the contract providers or that the patients were refusing the referral and electing to seek care at the STVHCS. However, the study reveals that only 18 patients meeting the criteria for care under the current inpatient contract were treated at the STVHCS during the first nine months of the contract. Consequently, the hypothesis that patients were receiving inpatient care at the STVHCS was ruled out. The study shows that few patients from the LRGV met the criteria for admission during the contract period. This will be explained in further detail in the discussion regarding the moving average technique.

On the other hand, 134 patients living in the LRGV counties had an ambulatory surgery or procedure at the STVHCS during the first nine months the contract was in effect. This indicates that the number of ambulatory surgeries or procedures performed under the contract could have been much higher. The question is why did these patients seek treatment at the STVHCS rather than utilize the ambulatory surgery/procedure contract? According to the veteran ambulatory surgery survey, 95 percent of the veterans sought care at the STVHCS because their physician did not offer them the opportunity to utilize the contract. In addition, the facility has not advertised this service to the veterans. Consequently, veterans don't know to ask their physician if they can receive their care locally. Another problem the survey revealed is that many veterans are referred to the STVHCS to receive specialty care. It appears that the specialty care physician often refers the patient for an ambulatory surgery/procedure at the STVHCS. The Audie and Kerrville Division physicians need to be trained to offer patients living in the Valley the option to receive further care in their local areas under the existing contracts.

The veteran inpatient and ambulatory surgery surveys revealed that 79 percent of the veterans surveyed receive their primary medical care at the McAllen outpatient clinic and only go to the Audie or Kerrville Divisions for specialty or acute inpatient services. This demonstrates the veterans' preference to receive medical care locally. In addition, 93 and 74 percent of veterans surveyed responded respectively that they would prefer to have any ambulatory surgeries or inpatient hospitalizations in their local area at VA expense which indicates a demand for the services provided by the contracts. Most of the patients who received care at the STVHCS rather than utilizing the contract providers did so because their primary care physician did not refer the patient to a contract provider (100

percent inpatient and 95 percent outpatient). The data confirmed that the lack of referrals was a pervasive problem and not limited to a particular physician. The five patients who declined the opportunity to receive ambulatory surgery in their local area under the contract did not prefer treatment at a VA hospital as hypothesized. Rather, the patients encountered difficulty scheduling their ambulatory procedures under the contracts and elected to go to the Audie or Kerrville Division.

The results of the physician surveys were consistent with the utilization statistics. Both indicate that the ambulatory procedure contract is working well. However, both identified problems with the inpatient contract. The physician ambulatory procedure survey indicates that physicians are routinely referring patients to contract providers for recommended ambulatory procedures. According to the survey, the only patients who are not referred to contract providers are those who did not meet the medical criteria or those patients with co-morbid conditions. Conversely, the majority of physicians seldom (33 percent) or never (33 percent) refer patients for the inpatient contract. The reason cited by physicians is that few patients meet the medical criteria as appropriate candidates for the contract services. In general, the physicians' responses expressed confusion over the existence of a contract for inpatient services and confusion as to what constitutes medical appropriateness for an inpatient referral.

Because treating the LRGV patients could be accomplished at the Audie or Kerrville Divisions without adding any personnel or infrastructure, the marginal cost of treating these patients is significantly less than the contract cost. In fact, the contract cost is nearly two and a half times more expensive than the VAMC cost of providing the same care. The travel cost included in the VAMC cost may have been slightly inflated as some

patients from the LRGV use a shuttle bus for transportation. Patients who use the shuttle are not eligible for travel reimbursement. Although the Audie and Kerrville Divisions do not incur any expense for patients using the shuttle bus, the travel cost should still be an accurate approximation of the cost of transportation between San Antonio and the Valley. Although this cost analysis did not attribute a dollar value to the inconvenience experienced by the patient when traveling 500-600 miles to receive medical care at the Audie or Kerrville Divisions, time and opportunity costs could be included. Clearly the advantage of the contracts lies in the improved access to healthcare for patients living in the LRGV.

An unanticipated finding of the study is that the utilization review nurse is not monitoring the DRG of the patients. Only one of the nine DRGs from the UR nurse's database agreed with the actual DRG billed by the contract provider. This is a problem because the facility reimburses the contract provider based on the DRG. Regardless of the length of stay, the facility is paying for the DRG. For example, if one patient has a three day length of stay and another patient with the same DRG has a 10 day length of stay, the amount the facility will pay the contract provider is the same. Consequently, the UR nurse should be monitoring and approving the patients' DRG and not the length of stay. If the DRG changes during the stay, the stay may be more costly than the facility is anticipating. An analysis of the billed DRGs versus the UR nurse's DRGs showed that the billed DRGs cost approximately $6,000 more than the anticipated dollar amount. The large variation was primarily due to one particularly costly DRG. If the costly DRG is removed from the analysis, the billed amount and the anticipated cost is equivalent. However, ignoring this discrepancy could be a potentially costly mistake.

Another unanticipated finding of the study is that the referring physicians do not completely understand the DRG system. On the survey, the physicians cited co-morbid conditions as one of the major reasons for not referring a patient to a contract provider. However, the patients' diagnoses and procedures determine the DRG. Consequently, a primary diagnosis with a co-morbid condition such as uncontrolled diabetes or congestive heart failure will fall into a higher DRG. In other words, either the DRG includes the co-morbid conditions or the co-morbid conditions do not influence the DRG selection. If the referring physician and the UR nurse are correctly determining the DRG, any patient with the designated DRGs should be referred to a contract provider.

Although the moving average technique proved to be a statistically reliable predictor of utilization, the model needs to predict utilization with a greater degree of precision in order to be a useful management tool. The unpredictable utilization of the ambulatory surgery contract may be a result of two well-known healthcare trends: the industry-wide conversion from inpatient to outpatient services and the tendency to increase utilization with improved access to healthcare services. There is a marked increase both facility and industry-wide in the growth of ambulatory procedures. The moving average technique clearly illustrates the increased numbers of surgical procedures offered in an ambulatory setting between 1996 and 1999. The moving average technique also clearly illustrates the dramatic increase in utilization in the third quarter of 1999, coinciding with the availability of the contract services. While the moving average technique incorporates the trend of increased ambulatory procedures over time, it could not predict the dramatic increase in utilization due to the availability of services. However now that improved local access is established, the moving average technique's

reliability will most likely improve over time. The unpredictable utilization of the inpatient contract is also clearly due in part to the change in the HCFA average length of stay. The contract is limited to DRGs with a HCFA average length of stay of three days or less. However, the DRGs included in this category varied significantly during the data collection period from 1996 to 1999. Consequently, fewer patients from the LRGV met the criteria for admission during the contract period.

Conclusion

Overall, the ambulatory surgery contract with non-VA providers is working very well. Conversely, the inpatient contract is drastically underutilized. The surveys indicate that the veterans would prefer to receive care in their local area at VA expense. The physician surveys indicate that physicians are routinely referring ambulatory surgery patients to contract providers. However, physicians seldom or never refer inpatients to contract providers. Consequently, specific criteria and training regarding medical appropriateness would enhance both the ambulatory procedure and the inpatient referral process. The cost benefit analysis revealed that the contract cost is considerably higher than the VAMC cost of providing the same care.

In conclusion, the STVHCS must make some strategic decisions regarding whether they want to improve healthcare access for veterans living in the LRGV. They must also evaluate whether under the current budget constraints they can afford to offer improved access at a cost that is more than twice as expensive as the VA's cost of providing the same care.

If the decision is to improve access by utilizing the LRGV contracts with non-VA providers, then the STVHCS needs to advertise this service to its veterans. The STVHCS

may want to consider expanding the inpatient DRGs covered under the contract so more veterans can take advantage of the inpatient capability. The STVHCS needs to train all physicians, especially at Audie Division, to refer patients to the contract providers. They also need to develop criteria for medical appropriateness and train physicians regarding what constitutes an appropriate referral.

Finally, the moving average technique is statistically reliable and the precision of this technique will probably improve over time now that the exogenous shock of improved access is accounted for and incorporated into future projections. The study's findings and recommendations will provide the STVHCS officials valuable information to be used in making necessary strategic decisions and in negotiating new contracts in 1999.

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Appendix A
VETERAN AMBULATORY PROCEDURE QUESTIONNAIRE

1. Where do you receive the majority of your medical care?
   ___ALMD VA ___KD VA ___McAllen OPC ___CBOC ___Other

2. Who is your primary care provider? _____

3. Did your VA physician offer you the opportunity to have the ambulatory surgery/procedure in your local area at VA expense?

   ____Yes ____No

4. If yes, why did you elect to have the surgery/procedure at the VA?
   ____Know the VA, VA Drs and nurses
   ____In conjunction with another ALMD or KD appointment
   ____Prefer VA, VA physicians or VA nurses
   ____Prefer medical treatment in San Antonio or Kerrville
   ____VA physician recommended the VA
   ____Other _____

5. Given the choice, would you:
   ____Prefer to have outpatient procedures in your local area at VA expense
   OR
   ____Prefer to have outpatient procedures at the VA in San Antonio or Kerrville

Appendix B
PHYSICIAN QUESTIONNAIRE

1. How often have you offered veterans needing ambulatory procedures the opportunity to receive the procedure by contract physician in the local area under the ambulatory surgery/procedure contract?

   ___Always ___ Most of the time ___Sometimes ___Seldom ___Never

2. How often have the veterans accepted the offer to receive the procedure by a contract physician in the local area under the ambulatory surgery/procedure contract?

   ___Always ___Most of the time ___Sometimes ___Seldom ___Never

3. For veterans to whom you did not offer the option of using the contract, why?
   ____ Patients did not meet the medical criteria for the contract
   ____ Due to co-morbidities of the patients
   ____ Other, specify _____

4. For veterans who have preferred not to use the contract even after you offered the option, why?
   ____ Patients preferred to be treated at a VA facility
   ____ Patients preferred to be treated in San Antonio or Kerrville
   ____ Patients scheduled the procedure in conjunction with another ALMD or KD VA appointment.
   ____ Patients are familiar with the VA hospital, physicians and nurses
   ____ You recommended the VA
   ____ Other _____
   ____ Patient did not state a reason

Appendix C
VETERAN INPATIENT QUESTIONNAIRE

1. Where do you receive the majority of your medical care?
   ___ALMD VA ___KD VA ___McAllen OPC ___CBOC ___Other

2. Who is your primary care provider? _____

3. Did your VA physician offer you the opportunity to have the hospitalization in your local area at VA expense?

   ____Yes ____No

4. If yes, why did you elect to be hospitalized at the VA?
   ____Know the VA, VA Drs and nurses
   ____In conjunction with another ALMD or KD appointment
   ____Prefer VA, VA physicians or VA nurses
   ____Prefer medical treatment in San Antonio or Kerrville
   ____VA physician recommended the VA
   ____Other _____

5. Given the choice, would you:
   ____Prefer to be hospitalized in your local area at VA expense
   OR
   ____Prefer to be hospitalized at the VA in San Antonio or Kerrville

Appendix D
PHYSICIAN INPATIENT QUESTIONNAIRE

1. How often have you offered veterans needing short-stay inpatient admissions the opportunity to receive the admission by a contract facility in the local area under the short-stay inpatient admission contract?

   ___Always ___Most of the time ___Sometimes ___Seldom ___Never

2. How often have the veterans accepted the offer to receive the inpatient admission by a contract facility in the local area under the short-stay inpatient admission contract?

   ___Always ___Most of the time ___Sometimes ___Seldom ___Never

3. For veterans to whom you did not offer the option of using the contract, why?
   ____ Patients did not meet the medical criteria for the contract
   ____ Due to co-morbidities of the patients
   ____ Other, specify _____

4. For veterans who have preferred not to use the contract even after you offered the option, why?
   ____ Patients preferred to be treated at a VA facility
   ____ Patients preferred to be treated in San Antonio or Kerrville
   ____ Patients scheduled the procedure in conjunction with another ALMD or KD VA appointment.
   ____ Patients are familiar with the VA hospital, physicians and nurses
   ____You recommended the VA
   ____Other _____
   ____Patient did not state a reason

Table 1
Contract Utilization

# Ambulatory Surgery/Procedures	551
# Inpatient Hospitalizations	7
# Observation Stays	9

Table 2
Veteran Ambulatory Surgery Survey Results

# Patients who had ambulatory surgery at KD or ALMD		134
# patients responded to survey		103
Response Rate		77%
	Totals	**%**
1. Where do you receive medical care?		
ALMD	15	15%
KD	2	2%
McAllen OPC	81	79%
CBOC	2	2%
Other	3	3%
Total	103	100%
2. Who is your primary care provider?		
xxxxx	15	15%
xxxxx	13	13%
xxxxx	15	15%
xxxxx	8	8%
xxxxx	9	9%
xxxxx	1	1%
Diff. Dr.	16	16%
Other	19	18%
Unknown	7	7%
Total	103	100%
3. Did your VA physician offer the contract?		
Yes	5	5%
No	98	95%
Total	103	100%
4. Why VA?		
Know Va	0	0
Conjunction with appt.	0	0
Prefer VA	0	0
Prefer SA or KD	0	0
MD Recommended	0	0
Other	5	100%
Total	5	100%
5. Would you:		
Prefer amb. surg local area at VA expense	75	74%
Prefer SA/KD	2	2%
Prefer amb. surg. at VA in SA	16	16%
Prefer amb. Surg. At VA in KD	1	1%
Undecided	6	6%
Whatever MD recommended	1	1%
Total	101	100%

Table 3
Veteran Inpatient Survey Results

# Patients who had inpatient hospitalizations at KD or ALMD		18
# Patients responded to survey		14
Response Rate		78%
	Total	**%**
1. Where do you receive medical care?		
ALMD	3	21%
KD	0	0%
McAllen OPC	11	79%
CBOC	0	0%
Other	0	0%
Total	14	100%
2. Who is your primary care provider?		
xxxxx	3	21%
xxxxx	2	14%
xxxxx	3	21%
xxxxx	0	0%
xxxxx	0	0%
xxxxx	1	7%
Diff. Dr.	4	29%
Other	0	0%
Unknown	1	7%
Total	14	100%
3. Did your VA physician offer the contract?		
Yes	0	0%
No	14	100%
Total	14	100%
4. Why VA?		
Know VA	0	
conjunction with appt.	0	
Prefer VA	0	
Prefer SA or KD	0	
MD Recommended	0	
Other	0	
Total	0	
5. Would you:		
Prefer hospitalization local area at VA expense	13	93%
Prefer SA/KD	0	0
Prefer hospitalization at VA in SA	1	7%
Prefer hospitalization at VA in KD	0	0%
Undecided	0	0%
Whatever MD recommended	0	0%
Total	14	100%

Table 4
Physician Ambulatory Surgery Survey Results

# Physicians authorized to refer pts.to contract	10
# Physicians responded to survey	8
Response Rate	80%

	Totals	%
1. How often offered?		
Always	4	50%
Most of the time	4	50%
Sometimes	0	0%
Seldom	0	0%
Never	0	0%
Total	8	100%
2. How often accepted?		
Always	3	38%
Most of the Time	5	63%
Sometimes	0	0%
Seldom	0	0%
Never	0	0%
Total	8	100%
3. Why not offered?		
Did not meet medical criteria	5	50%
Co-morbidities	5	50%
Other	0	0%
Total	10	100%
4. Why veteran not want contract?		
Preferred VA facility	3	23%
Preferred SA or Kerrville	4	31%
Conjunction with another ALMD or KD a	1	8%
Familiar with VA	3	23%
You recommended VA	0	0%
Other	1	8%
Patient did not state reason	1	8%
Total	13	100%

Table 5
Physician Inpatient Survey Results

# Physicians authorized to refer pts.to contract	10
# Physicians responded to survey	6
Response Rate	60%

	Totals	%
1. How often offered?		
Always	1	17%
Most of the time	1	17%
Sometimes	0	0%
Seldom	2	33%
Never	2	33%
Total	6	100%
2. How often accepted?		
Always	2	40%
Most of the Time	2	40%
Sometimes	0	0%
Seldom	0	0%
Never	1	20%
Total	5	100%
3. Why not offered?		
Did not meet medical criteria	4	44%
Co-morbidities	4	44%
Other	1	11%
Total	9	100%
4. Why veteran not want contract?		
Preferred VA facility	1	25%
Preferred SA or Kerrville	0	0%
Conjunction with another ALMD or KD a	2	50%
Familiar with VA	0	0%
You recommended VA	0	0%
Other	1	25%
Patient did not state reason	0	0%
Total	4	100%

Table 6
Cost/Benefit Analysis

Contract Cost

			Inpatient	Outpatient
Contract $ Cost			$ 41,429	$ 225,990
Salary Cost	**% Time LRGV**	**Salary/Benefits**		
Fee Clerk	60%	$33,730	$ 1,012	$ 19,226
RN	75%	$47,339	$ 1,775	$ 33,729
Social Worker	50%	$33,073	$ 827	$ 15,709
Total Contract Cost			**$ 45,043**	**$ 294,655**

VAMC Cost

	Inpatient	Outpatient
VAMC Marginal Cost	$ 16,176	$ 108,475
Travel Cost	$ 2,886	$ 10,615
Lodging Cost	$ -	$ 3,211
Total VAMC Cost	**$ 19,062**	**$ 122,300**

Table 7
Outpatient Moving Average Forecast

Moving Averages and Quarterly Seasonal Indexes

Year	Quarter	Outpt. Procedures	Four-pt MA	Centered MA	Seasonal Index
1996	1	8			
	2	11	14		
	3	12	26	20	0.62
	4	24	38	32	0.75
1997	1	58	52	45	1.29
	2	56	61	57	0.99
	3	68	57	59	1.15
	4	61	55	56	1.08
1998	1	41	58	57	0.73
	2	48	82	70	0.69
	3	82	120	101	0.81
	4	158			
1999	1	192			

	Year	Q1	Q2	Q3	Q4	
	1			0.62	0.75	
	2	1.29	0.99	1.15	1.08	
	3	0.73	0.69	0.81		
	Totals	2.02	1.67	2.58	1.83	
	Average	1.01	0.84	0.86	0.92	0.904617
Seasonal	Index					0.095383
Adjusted Seasonal						0.023846
	Index	1.03	1.00	0.98	0.99	1

Forecast Ambulatory Procedures for Q2 1999 - Q1 2000

Quarter	Centered MA	Adj. Seas. Index	Forecast
Q1	57	1.03	58
Q2	70	1.00	70
Q3	101	0.98	99
Q4	56	0.99	55
Annual Total			283

Table 8
Outpatient Moving Average Forecast

Year	Quarter	Outpt. Procedures	Four-pt MA	Centered MA	Seasonal Index
1996	1	8			
	2	11	14		
	3	12	26	20	0.62
	4	24	38	32	0.75
1997	1	58	52	45	1.29
	2	56	61	57	0.99
	3	68	57	59	1.15
	4	61	55	56	1.08
1998	1	41			
	2	48			

Year	Q1	Q2	Q3	Q4	
1			0.62	0.75	
2	1.29	0.99	1.15	1.08	
3					
Totals	1.29	0.99	1.76	1.83	
Average	1.29	0.99	0.88	0.92	1.018572
Seasonal Index					-0.01857
Adjusted Seasonal Index	1.03	1.00	0.98	0.99	-0.00464 1.00

Forecast Ambulatory Procedures for Contract Period

Quarter	Centered MA	Adj. Seas. Index	Forecast
Q1	45	1.03	46
Q2	57	1.00	57
Q3	59	0.98	58
Q4	56	0.99	55
Annual Total			216
Actual Utilization			551
Standard Deviation			237
95% Confidence Interval			+/-4.70 Std. Dev.

Table 9
Inpatient Moving Average Forecast

Moving Averages and Quarterly Seasonal Indexes

Year	Quarter	Admissions	Four-pt MA	Centered MA	Seasonal Index
1996	1	96			
	2	100	100		
	3	100	95	98	1.02
	4	104	91	93	1.12
1997	1	75	86	89	0.85
	2	85	78	82	1.03
	3	81	70	74	1.10
	4	72	57	64	1.13
1998	1	40	38	48	0.84
	2	33	22	30	1.10
	3	6	17	20	0.31
	4	7			
1999	1	21			

	Year	Q1	Q2	Q3	Q4	
	1	0.85	1.03	1.02	1.12	
	2	0.84	1.10	1.10	1.13	
	3			0.31		
	4					
	Totals	1.69	2.13	2.43	2.25	
	Average	0.85	1.07	0.81	1.12	0.961381
Seasonal	Index	0.87	0.96	1.04	1.13	1

Forecast Inpatient Admissions for Q2 1999 - Q1 2000

Quarter	Centered MA	Adj. Seas. Index	Forecast
Q1	48	0.87	41
Q2	30	0.96	29
Q3	20	1.04	20
Q4	64	1.13	72
Annual Total			162

Table 10
Inpatient Moving Average Forecast

Year	Quarter	Admissions	Four-pt MA	Centered MA	Seasonal Index
1996	1	96			
	2	100	100		
	3	100	95	98	1.02
	4	104	91	93	1.12
1997	1	75	86	89	0.85
	2	85	78	82	1.03
	3	81	70	74	1.10
	4	72	57	64	1.13
1998	1	40			
	2	33			

	Year	Q1	Q2	Q3	Q4		
	1	0.85	1.03	1.02	1.12		
	2			1.10	1.13		
	3						
	4						
	Totals	0.85	1.03	2.12	2.25		
	Average	0.85	1.03	1.06	1.12	1.016355	
Seasonal	Index	0.83	0.96	1.08	1.13	1	

Forecast Inpatient Admissions for Contract Period

Quarter	Centered MA	Adj. Seas. Index	Forecast
Q1	89	0.83	73
Q2	82	0.96	79
Q3	74	1.08	80
Q4	64	1.13	72
Annual Total			304
Actual Utilization			16
Standard Deviation			204
95% Confidence Interval			+/-4.0 Std. Dev.